

30/4/17
Anglesey County Council

ANNUAL REPORT

OF THE

PRINCIPAL SCHOOL MEDICAL OFFICER

FOR 1953

G. WYNNE GRIFFITH,
Principal School Medical Officer.
and
County Medical Officer

ANGLESEY COUNTY COUNCIL.

To the Chairman and Members of the Education Committee.

My Lord, Ladies, and Gentlemen,

I have the honour to present the forty-first Annual Report of the School Medical Service in the County.

The health of the school population, in so far as it can be measured by statistical indices, continued to be satisfactory in 1953 and in the body of this report will be found several indications in support of this general conclusion.

The work of the school medical department proceeded smoothly during the year and the establishment—medical, dental, nursing and clerical—was up to strength. In last year's report I mentioned the difficulty in providing two ancillary services, viz., psychiatric social work and speech therapy, and I went on to say—

“In the case of both these deficiencies the committee has actively sought a solution. You are confronted, however, with a nation-wide shortage of qualified persons and the added complication of the language. Psychiatric social work and speech therapy could only be effectively provided in this area by Welsh speaking workers. I have suggested for the consideration of the committee the possibility of selecting suitable persons and sending them for training.”

These remarks are still apposite.

Contrary to expectations, the proposal to establish a day special school for educationally subnormal children at Rhoscolyn did not come to fruition in 1953. The matter, however, is still being actively pursued and at the time of writing it appears not unlikely that 1954 will see this project materialise albeit in a modified form.

Discussions with the other authorities in North Wales are still continuing on the proposal to establish a residential special school for physically handicapped and delicate pupils. A proposal to acquire and adapt certain existing premises did not meet with general approval and the question of building a new school to serve this large area is being further explored. Meanwhile, all physically handicapped pupils requiring special educational treatment in a boarding school have to enter schools in England. To the disadvantage of distance is added, in some cases, the difficulty of language.

Liaison with the other parts of the health services has been maintained. No child is referred to hospital by me except with the prior knowledge of his family doctor. I ensure that a copy goes to the family doctor of any reports I receive of hospital treatment given to school children. I am glad to report that the Caernarvonshire and Anglesey Hospital Management Committee have established a consultative paediatric clinic at Holyhead. This is a subject to which I have referred on more than one occasion in previous reports.

Once again the report does not contain detailed reference to unsuitable and insanitary school premises. Routine reports on these matters are brought to the attention of the Director of Education from time to time following visits paid to schools. While so much remains to be done in rehousing the population and slum clearance, it appears invidious to enlarge on the need for school building particularly as the Authority are pressing forward with their building programme with such expedition as, in all the circumstances, they are permitted to display.

In the financial year 1953/4 the approximate gross cost of the school medical services amounted to £14,620, which is equivalent to an expenditure of 36/0d. per head of the school population. After allowing for Government grants the approximate rate-borne expenditure represented a rate of 3.61 pence for the year, or an expenditure equivalent to 7/8½d. per head of the school population.

I am indebted to the several consultants for the help they have readily given. It is a pleasure, too, to acknowledge the interest taken in the work by the Chairman and members of the School Children Welfare Committee. I wish also to thank the Director of Education and his department for their valuable assistance, the Superintendent Nursing Officer, and the school nurses for their loyal services, and not least, my professional colleagues and office staff for the excellence of their work and their help in the preparation of this report.

I am,

Your obedient Servant,

G. WYNNE GRIFFITH,
Principal School Medical Officer.

April, 1954.

MEMBERS OF ANGLESEY EDUCATION COMMITTEE, 1953/4

Chairman : Alderman G. Ll. Williams.*

Vice-Chairman : Mr. R. Davies, J.P.*

Chairman of School Children Welfare Committee : Alderman H. R. Evans.

Vice-Chairman of School Children Welfare Committee : Mrs. M. Hughes, B.E.M.

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| Lord Anglesey. | *Mr. Llewelyn W. Jones,
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| Mr. C. W. Beretta. | Mr. O. R. E. Jones, J.P. |
| Alderman R. D. Briercliffe,
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| Mr. J. F. Chadwick, M.C.,
B.A. | *Mr. R. D. Jones. |
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| *Lady Emrys Evans. | Mr. W. Parry Jones. |
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| Mr. R. J. Hughes-Owen. | Mr. J. Hugh Lewis, J.P. |
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(Resigned). | *Mr. John Lloyd. |
| Mr. A. Ifan Jones, M.B.E.,
J.P. | *†Mr. T. Lovett, M.Sc., A.R.I.C. |
| Mr. Hugh Jones, J.P. | *Mrs. J. Morris. |
| Rev. J. Lambert Jones. | Mr. E. R. Oliver. |
| | *Mr. W. Charles Owen. |

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 Alderman Griffith Pritchard.
 Mr. O. M. Pritchard.
 *Alderman R. O. Pierce, J.P.
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 J.P.
 *Mr. H. K. Roberts.
 Mr. I. O. Roberts.
 *†Mr. John Roberts.
 †Prof. R. Alun Roberts, Ph.D.
 *Mr. Robert Roberts, J.P.
 Mr. A. Robertson.
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 J.P.
 *Lady Kathleen Stanley.
 (Resigned.)
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- Mr. David Thomas.
 †Principal Richard Thomas,
 M.A., D.Sc.
 Alderman William Thomas.
 Sir Harry Verney, Bart.,
 D.S.O.
 *Mr. E. R. Williams.
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 D.Litt., F.B.A.
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 Williams, O.B.E., D.L.,
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 Mr. J. Morris Williams.
 *Mr. R. Pierce Williams.
 Alderman W. D. Williams.
 Alderman W. O. Williams.
 Sir Richard H. D. Williams-
 Bulkeley, Bart., J.P.

* Member of the School Children Welfare Committee.

† Co-opted member of the Education Committee.

Director of Education : E. O. Humphreys, M.A., B.Sc.

STAFF

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| Principal School Medical Officer
and County Medical Officer of
Health. | G. Wynne Griffith, M.D.,
D.P.H. |
| School Medical Officers (also Medi-
cal Officers of Health of County
Districts). | G. H. Browse Roberts, M.A.,
M.B., B.Ch., B.A.O., D.P.H.,
L.M.
G. P. Wallace, M.A., M.B.,
ChB., D.P.H. (Left, 16.5.53).
H. Mervyn Thomas, M.B.,
ChB., D.P.H., D.C.H., (Com-
menced, 1.10.53). |

School Medical Officer (also Asst. C.M.O.H.).	Mrs. Mair Humphreys Jones, M.B., ChB., C.P.H.
School Dental Surgeons	Elwyn Jones, L.D.S. C. Rolant Thomas, M.R.C.S., L.R.C.P., L.D.S.
Dental Attendants.	Mrs. Megan Pritchard. Miss Mair Roberts. (Left, 31.7.53). Miss Edna M. Jones (from 1.9.53).
Consulting Paediatrician.	*Gwyn R. Griffith, M.D., F.R.C.P., D.P.H., D.C.H.
Chest Physician.	*J. Glyn Jones, M.A., M.D., M.B., B.Ch., M.R.C.S., L.R.C.P.
Consulting Child Psychiatrist.	*E. Simmons, L.R.C.P.
Consulting Ophthalmic Surgeons.	*T. G. Wynne Parry, M.R.C.S., L.R.C.P., D.O.M.S. *G. C. Laszlo, M.D. (Budapest), L.R.C.P. (Edin.), D.O. (Oxford).
Consulting Orthopaedic Surgeons.	*Prof. B. L. McFarland, M.D., M.Ch. (Orth.), F.R.C.S. *G. I. Roberts, M.B., Ch.B., M.Ch. (Orth.), F.R.C.S.
Consulting E.N.T. Surgeon.	*John Roberts, F.R.C.S.
Orthoptist.	§Miss Joy Miller.
Physiotherapists.	§Miss G. N. Holme, M.C.S.P. §Miss B. M. Hughes, M.C.S.P.

* Under contract with Regional Hospital Boards.

§ Employed by the Caernarvonshire and Anglesey Hospital Management Committee.

Superintendent of School Nurses (also Supt. Nursing Officer).	Miss H. V. Parry, S.R.N., S.C.M., Q.N., H.V. (Cert.).
Deputy Superintendent of School Nurses (also Deputy Supt. Nurs- ing Officer).	Miss M. Rh. Parry, S.R.N., S.C.M., H.V. (Cert.).
School Nurses.	Mrs. Cotgreave. †Miss Gwladys Hughes. †Mrs. E. Jones. (Left, 31.10.53). †Miss E. C. Parry. †Miss E. C. Pritchard. †Mrs. M. M. Williams. †Miss G. Pritchard. †Miss E. Owen (Commenced 16.11.53).
Chief Administrative Assistant.	Horace Betts, D.P.A.
Clerical Staff	Maldwyn Jones. Miss Eluned Jones. Miss D. M. Williams. R. J. Jones. Miss E. C. Parry. Miss Eunice Jones. Miss N. M. Williams.

† Also Health Visitors.

REPORT OF THE PRINCIPAL SCHOOL MEDICAL OFFICER

THE RESULTS OF MEDICAL INSPECTION

The school population on 9th January, 1953, was :—

Primary and Modern Schools	5,827
Grammar Schools	2,295
	<hr/> 8,122 <hr/>

The work of medical inspection is detailed in tables at the end of this report. The statistics reflect a satisfactory state of health among the school population. During the year there were 3 deaths of children aged 5 to 15 years (a death rate of approximately 0.37 per 1,000 school population per annum). The causes of death were: Diabetes, Drowning and Tuberculous Meningitis.

Details of notifiable diseases for the year are appended, showing the total occurring at all ages and the number among children of school age.

Disease	Urban	Rural	Total	No. of School-age Children
Diphtheria	—	—	—	—
Scarlet Fever.....	31	18	49	24
Ac. Poliomyelitis	1*	1*	2*	—
Ac. Pneumonia	3	7	10	1
Dysentery.....	6	57	63	19
Erysipelas.....	1	1	2	—
Food Poisoning	2	1	3	—
Measles	488	275	763	418
Whooping Cough	39	105	144	60
Puerperal Pyrexia.....	—	1	1	—
TOTAL	571	466	1,037	522

* Paralytic.

In addition to the above table it is known that the following major infectious diseases occurred amongst Anglesey residents. As, however, the diseases were diagnosed in hospitals in a neighbouring county, they were notified to the Medical Officers of Health of the districts in which the hospitals are situated :—

Poliomyelitis 3 (2 school children)
 Encephalitis (following chickenpox) 1 (school child).
 Meningococcal Meningitis..... 1

The infectious diseases were rather more troublesome than in 1952. This was largely due to an epidemic of *measles* in the Holyhead, Valley and Llangejni districts. *Dysentery* was also more prevalent than in the previous year, but *whooping cough* was less troublesome. Once again the county escaped any serious outbreak of *poliomyelitis*, and for the fourth consecutive year no case of *diphtheria* occurred in the county.

School attendance was good. In the primary schools the average attendance was 88 per cent. of the children on register, and in the county secondary schools the attendance was 92 per cent. The corresponding figures for 1952 were 90 and 93 per cent. respectively.

As will be seen from Table IIA. on page 26 the commonest defects discovered at routine medical inspection are defects of vision, including squint, and defects of the nose and throat. Minor orthopaedic departures from the normal, flat feet and postural defect, are frequently noted, but the severe crippling defect is happily not often seen. Otitis media continues to be numerically a minor problem, and no cases of the infectious skin diseases, scabies, impetigo and ringworm were discovered.

GENERAL CONDITION AND NUTRITION

The data relating to general condition and nutrition (to be found in Table IIB. on page 27) have been expressed as percentages in the table given below, which also gives the comparable figures for 1952 in parenthesis.

ROUTINE MEDICAL INSPECTION, 1953—CLASSIFICATION OF GENERAL CONDITION (PERCENTAGES).

	A (Good)	B (Average)	C (Poor)
Entrants	25.7 (31.4)	71.7 (66.9)	2.6 (1.7)
Intermediate Group	19.7 (30.5)	79.2 (67.8)	1.1 (1.7)
Leavers	37.6 (31.9)	61.1 (65.6)	1.5 (2.5)
ALL GROUPS.....	27.3 (31.3)	70.8 (66.7)	1.9 (2.0)

The percentages of children in Classes A and C show a decrease.

The interpretation of these trends is not straightforward, especially as the classification is a purely subjective one, and medical officers vary in the standard they adopt.

The *Milk in Schools* scheme continued to operate satisfactorily. Every school is supplied with pasteurized milk in one-third pint bottles. Such a service, for which we are indebted to the Milk Marketing Board, must be almost unique in rural counties.

The average number of meals served by the *School Meals Service* per school day was 6,070, and this number represents approximately 75 per cent. of the school population. This represents a decline from the figure of 82 per cent. recorded last year.

Taking the number of meals provided as a yardstick, the Education Committee is undoubtedly the largest catering concern in the county, and the standard of food hygiene in school canteens is therefore a matter of considerable interest. When visiting schools the school medical officers pay particular attention to food hygiene in canteens.

TUBERCULOSIS

Mass Radiography.

One of the Welsh Regional Hospital Board's mobile mass radiography units visited the county during the period February to July, and conducted a survey of the general population and of children aged 14 and over in the various schools. The unit was a new type, taking a 70 mm. film.

The number of children examined in the various schools is shown below :—

<i>School.</i>	
Amlwch Grammar	206
Amlwch Modern Secondary	158
Beaumaris Grammar	260
Bryngwran Modern Secondary.....	55
Holyhead Grammar.....	610
Llangefni Grammar	219
Llangefni Modern Secondary.....	85
Menai Bridge Modern Secondary.....	59
Newborough Modern Secondary	46
Pencarnisiog Modern Secondary	47
Other Schools	26
Total.....	<hr/> 1,771 <hr/>

Abnormal findings were detected in 34 cases, as follows :—

Definite pulmonary tuberculosis.....	1
Requiring observation for pulmonary tuberculosis ..	3
Other abnormalities :—	
Bronchiectasis.....	9
Bony abnormalities.....	13
Heart disease	3
Other abnormalities.....	3
Failed to return for large film.....	2
	—
	34
	—

The case of pulmonary tuberculosis noted above was already known to the department. She was a girl who was originally discovered at the mass radiography examination of school children in 1951. She has had a prolonged course of treatment and is now back at school, but is still under the supervision of the Chest Physician. None of the 3 "observation" cases was subsequently notified as definitely suffering from the disease. The great majority of the children who were regarded as showing other abnormalities were already known to us and are in receipt of appropriate treatment or supervision.

In addition to children the unit examined also the staff and the number seen together with the findings are shown below :—

<i>Staff.</i>	<i>No. examined.</i>	<i>Definite Tb.</i>	<i>Req. Obs. for Tb.</i>
Teachers	236	—	6
Cleaners and Caretakers	13	—	—
Nurses	23	—	—
Canteen Staff	113	—	—

It will be noted that there were 6 teachers requiring to be kept under observation because of X-ray signs suspicious of pulmonary tuberculosis. It is not known how many of these 6 are under supervision by the chest physician, but one schoolteacher was subsequently notified as suffering from the disease.

Where the mass radiography unit discover suspicious signs they advise the person to consult his own doctor with a view to being seen at the chest clinic, but in order to maintain the confidential nature of the mass radiography examination the unit very rarely diagnose tuberculosis, and therefore, are under no obligation to

notify the medical officer of health. Unless the individual does consult his own doctor and attends the chest clinic in due course I do not officially know the outcome.

Notifications of Tuberculosis.

During the year 17 cases of tuberculosis were notified among children of school age. This was a considerable increase on the number (9) for 1952, but less than the number (22) notified in 1951.

The form taken by the disease in this series was as follows :—
(The numbers in brackets are the corresponding figures for 1952.)

Non-respiratory forms	4 (5)
Glands of neck	2
Meningitis.....	2
Adult type respiratory tuberculosis.....	2 (1)
Primary chest infections.....	11 (3)

The increase in the number of new cases notified — from 9 in 1952, to 17 in 1953—is largely accounted for by the increased number of primary infections coming to light. The mass radiography survey is partly responsible for the discovery of these cases—there was no such survey in 1952—and the tuberculin survey of school entrants (reported in detail in the Appendix) also accounted for a number.

B.C.G. Vaccination.

One of the measures of prevention at our disposal is B.C.G. vaccination, and 98 school age children were examined with a view to this treatment being given. After testing 59 were vaccinated during the year.

In November, 1953, the Ministry of Health announced that local authorities could extend B.C.G. vaccination programmes to cover all school children during their fourteenth year. Preparations are now well advanced to commence on this extension of the B.C.G. programme in the county during 1954.

A Tuberculin Survey of School Entrants.

This was a new departure and is reported in detail on pages 30-40. The implications of a positive tuberculin test in a child require some explanation. Exercising a legitimate amount of over-

simplification one might say that a positive result from a test of this kind means that, at some time in the past, the child has taken into his body the germs of tuberculosis. If the child is healthy and the dose of germs is small the child will have overcome the invasion, and a positive reaction to the tuberculin test may well be all he has to show for the episode. On the other hand, the dose may be large or the child's resistance may be low at the time, so that the germs may tend to get the upper hand. The ensuing struggle between the invading germs and the defences of the body may be severe, and we recognise that the child is ill. He may need help in the battle—rest, fresh air, good food, medicines or other treatment. A tuberculin survey of children, therefore, enables us to discover those children that need examination with a view to treatment or a period of observation. But a survey of this kind can yield valuable information in other directions. As is well known, tuberculous infection may be acquired from two main sources: from milk and from human cases of disease. Faced with a positive tuberculin reaction in a child the question we should ask ourselves is—how was the infection acquired? Is there some unrecognized source of infection in this child's environment? Is the milk supply infected, or is there a human case of tuberculosis who has infected this child (and if this child, then possibly other children also)? A survey will serve also to indicate how many children in the area have been infected by the time they reach a certain age. Comparison with results from other areas, and with results at different times in the same area, will indicate how the intensity of infection is changing from time to time and from place to place.

The findings in the present survey are set out in detail in the Appendix, but certain comments may be permitted here. In the first place, it would appear that the pressure of infection in Anglesey *in this age group* is not markedly different from that reported from other areas. Secondly, it is interesting to note what a relatively small part is played by milk as a source of infection nowadays in this area. No figures can be quoted, but it is almost certain that a similar survey 10 or 15 years ago would have shown a very different picture. Thirdly, no children in this age group were found to be suffering from active disease; between 2 or 3 per 1,000 require to be kept under observation. Fourthly, no new unsuspected cases of adult disease were brought to light. This was disappointing, but certain lessons in organisation were learnt. The scope in this direction will in any case be limited to the extent that contact tracing is being actively pursued as a routine public health procedure. Finally, there was no evidence to suggest that infection was being disseminated in the schools.

THE WORK OF THE SCHOOL NURSE

The table printed below gives some indication of the volume of work done by the school nurse/health visitors.

	No. of schls. in district	Total average attndce.	No. of Exam- inations	No. of visits to homes	No. of visits to schools
Amlwch	9	1,104	5,422	192	133
Beaumaris	9	992	4,164	98	88
Bodorgan.....	7	673	5,190	32	99
Holyhead.....	13	2,254	9,352	1,177	244
Llanfechell.....	9	495	5,003	31	139
Llangefni.....	8	948	5,740	34	161
Menai Bridge....	9	824	5,095	39	131
TOTAL.	64	7,290	39,966	1,603	995

The work done by school nurses in the prevention of infestation with vermin deserves high praise. The nurses made 39,966 inspections, which is equivalent to every child being examined on the average five times during the year. The number found to be verminous was 105, or 1.29 per cent. of the school population. The number of cases of infestation shows an increase for the second successive year: 1951—64 cases; 1952—98 cases; 1953—105 cases.

The school nurses still attend to minor ailments when required, and the majority of the 637 cases noted in Group VII of the Treatment tables in the appendix (page 28) were in fact, seen by the nurses. These include the abrasions, bruises, cuts, stings and similar happenings of school life which call for sympathetic attention. We are fortunate in that impetigo, ringworm and scabies are rarely encountered at the present time.

MOBILE MINOR AILMENTS CLINIC

As was suggested in a previous report, this vehicle is rather inappropriately named. It has been used mainly as an "examination room on wheels."

Some details concerning the work of the clinic during the year are given below:—

Number of visits to schools	420
Mileage covered	5,926

Number of minor ailments treated	319
Number of routine cleanliness, etc., inspections made	24,200
Number of children seen for other reasons	218
Total number of children seen	24,737

It will be noted that more than half of all cleanliness inspections are carried out in the mobile clinic.

ORTHOPAEDIC CARE AND AFTER-CARE

The following table sets out the work done by the physiotherapists:—

Centre.	No. of Clinics held	No. of Home Visits	No. of Cases	No. of Treatments	U.V.R.	
					No. of Cases	No. of Treatments
Holyhead.....	39	—	151	908	75	386
Llangefni	40	9	86	286	10	58
Amlwch.....	40	10	61	437	13	61
Menai Bridge	39	—	65	376	30	152
Beaumaris ..	28	—	60	287	9	54
	186	19	423	2,294	137	711

Total number of names on the books during 1953 677

Total number of cases discharged during 1953 215

Breathing exercises, etc., have also been given in the five clinics to over 50 cases referred by hospitals.

During the year 399 attendances were made by 256 individual children at the 11 Orthopaedic Clinic sessions held at Holyhead and Llangefni, an average attendance of 36 per session.

When premises became available at the Old Gaol in Beaumaris, after-care sessions were held there from Easter, 1953, onwards.

This proved a great convenience to people living in that part of the county.

PHYSICAL EDUCATION

I append the report of the Physical Training Organiser :—

"A good general standard in Physical Education has been maintained during 1953 considering that lessons in the majority of the schools in Anglesey are taken out of doors. When the weather is unsuitable the lessons have to be taken where possible in the classrooms where, naturally, the work does not reach a high level of mobility and standard. Where there is a radio in the school the infant classes are able to partake in the Welsh programme " Rhigwm a Chan," which is mostly singing games. More schools are taking folk dancing and the children enjoy this enormously.

More plimsoll shoes and small apparatus were supplied to the schools and climbing frames were installed at Brynsiencyn and Llandrygarn. I am still concerned, however, with the wearing of plimsoll shoes as indoor shoes in some Secondary Schools. I do not think it desirable that this type of footwear which gives no support whatsoever to the foot, should be worn by the children all day and every day. One of the aims of the Physical Education lesson is to develop and maintain good posture and footwork. The wearing of this type of shoe is defeating this purpose. The situation is not a happy one and I am sure the School Medical Officer would agree with me. During the last two years it has not been found possible to supply the Secondary Schools with plimsoll shoes owing to the cost of such provision. I think, however, that the Committee should decide upon the advisability or otherwise, of wearing this type of shoe other than for Physical Education.

The new Ministry publication, " Planning the Programme," Part II, Physical Education, was released in September, and teachers in the Primary Schools have something more concrete to work on in the preparation of schemes of work.

Four three-year trained specialist teachers in Physical Education were appointed for September, two for the Sir Thomas Jones' School, Amlwch, and two for the County Secondary School, Llangefni. The teaching of Physical Education in Amlwch, Holyhead and Llangefni is now in the hands of fully trained people, but Beaumaris is yet to get specialist teachers to devote all their time to the teaching of Gymnastics, Athletics and Major games. Mr. J. A. Young resigned as Hon. Secretary of the Anglesey Secondary Schools Sports Association, a position he had held and worked so hard at since 1946. I have taken the work on and am receiving all help from Mr. Young.

Successful County Sports were held at Llangefni on Saturday, 27th June, where nine schools competed in a full programme. There were events for boys and girls in four age groups, where nine medals for first places were given by the President, five Vice-Presidents and other friends of the Association. A good standard of performance was attained by the Athletes and Holyhead County Secondary School again won the Shield and Cup.

A representative team of boys competed at the National Championships at Aberystwyth in July, where Anglesey boys gained eight places and equalled 11 standards.

The Anglesey Junior Football Team got as far as the third round in the English Schools Shield Competition, when they were beaten away by Altrincham 5—1. In the Welsh Schools Shield they lost in the first round to Arvon by 5 goals to 3.

The girls played two County Matches against Caernarvonshire, one in February, which they lost, and one in December, which they drew. In the North Wales Inter-County tournament Anglesey reached fourth place.

The standard of games could be much better, but the playing fields have not been in a very good condition.

I attended a Conference Course in Physical Education in July and found it most helpful, especially where outdoor pursuits were concerned.

Refresher Courses for Teachers in Physical Education, 1953.

I took three Refresher Courses for Teachers in Physical Education this year, the three centres being Amlwch, Beaumaris and Llangefni.

Amlwch.—The Course was held on Tuesday evenings, November 7th and 24th, and December 1st, at the County Primary School, Amlwch, from 5.30 to 6.30 p.m.

I took classes of children (Infants, Stds. I and II, and Stds. III and IV) for the first half of the sessions and activities and games practices were taken with the teachers for the second half, after a short talk on the Ministry's new book "Planning the Programme."

The Course was well attended, the total number of teachers attending being 91 for the three sessions.

Beaumaris.—The Course was held on Monday evenings on November 16th, 23rd and 30th, at the County Primary School,

Beaumaris, from 5.30 to 6.30 p.m. I took classes of children (Infants, Stds. I and II, and Stds. III and IV), and gave in the second half of the evenings short talks on the type of work expected in the Primary Schools. Miss Mair Parry, H.M.I., visited the course on November 23rd and 30th, and expressed satisfaction at the standard of work shown by the children.

Miss Hopkins-Jones, Physical Education H.M.I. for North Wales, visited the Course on Monday, November 30th, and expressed satisfaction at the type of work shown.

The Course was quite well attended considering the small number of schools in the area. The total number of teachers attending being 41 for the three sessions.

Llangefni.—The Course was held on Thursday evenings, November 19th, 26th and December 3rd, at the County Secondary School, Llangefni, from 5.30 to 6.30 p.m. I took classes of children (Infants, Stds. I and II, Stds. III and IV) for the first half of the sessions and movements and activities were taken with the teachers.

This course was well attended, the total number of teachers attending being 109 for the three sessions.

These Courses were taken to show the teachers the type of work advocated by the new Ministry book "Planning the Programme," which has taken the place of the 1933 Board of Education Syllabus of Physical Training for Schools.

Physical Education in Schools has undergone a great change in the last few years, and courses of this kind are considered helpful by the teachers and myself.

I would like to express my appreciation to the head teachers and teachers of Amlwch County Primary School, Beaumaris County Primary School and Llangefni Voluntary Primary School for their co-operation in allowing me the use of some of their classes for these Courses, thus making the courses successful.

EIRLYS W. ROBERTS."

DEFECTIVE EYESIGHT AND SQUINT

The ophthalmic service for school children continued to operate satisfactorily during the year as far as the examination of children and the prescription of glasses were concerned, although at one time there was a considerable "back-log" of cases awaiting appointments for consultations. Forty-one clinics were held during 1953,

and by the end of the year the waiting list had been substantially reduced ; 574 children were examined for errors of refraction, and 84 for other defects ; 552 prescriptions for spectacles were issued, and spectacles were supplied in 477 cases. Operative treatment for squint is available at the Caernarvonshire and Anglesey Hospital, Bangor, and during the year 16 cases were operated upon.

Orthoptic Exercises for the Treatment of Squint are given to cases referred by the consulting ophthalmologists. Details of this service are appended.

No. receiving treatment on the 1st January, 1953.....	73
No. of new cases referred.....	32
No. discharged after having treatment	5
No. discharged from failure to attend	11
No. receiving treatment at 31st December, 1953	89
Total attendances for treatment	987

This form of treatment is prolonged, and the number of defaulters is unfortunately large. Although operative treatment may give a good aesthetic result, orthoptic exercises are needed if the function of the squinting eye is to be restored. From April onwards a clinic session was also held at Holyhead. This should assist materially in reducing the number of defaulters from that part of the county.

The detection of defects of vision depends largely on the use of Snellen's test types which, as is well known, consist of alphabetical characters arranged in random fashion but in groups of decreasing size of type. Because the majority of small children "do not know their letters" when they are first examined by the school doctor this test cannot be applied to them, and although variants of the test are available, designed for the testing of illiterates, these tests suffer from distinct drawbacks when large numbers of children have to be examined. Unless the child displays some unusual behaviour, attributable to poor eyesight, a defect of vision may therefore pass unrecognised until the second routine medical inspection some years later. The school nurses, therefore, continued to carry out routine eye testing of the 7 year-old group shortly before a routine medical inspection was due at the school. Any child whose vision is suspect is referred to the doctor at the school medical inspection. 459 children were examined under these arrangements during the year, of which number 72 were referred to the medical officers.

DISEASES OF THE EAR, NOSE AND THROAT

All consultations and operations for conditions of the ear, nose and throat are held at the Caernarvonshire and Anglesey Hospital, Bangor.

These are among the commonest causes of ill-health among children, and during the year 178 cases were referred for a specialist opinion, and 163 cases were operated upon, mostly for the removal of tonsils and/or adenoids.

The position regarding the availability of these services is indicated below :—

Number of children waiting :—

	(a) Consultation	(b) Operation
at 31.12.53	9	10
at 31.12.52	16	26

There has been some improvement in the waiting list for operation, and the delay in obtaining an appointment for consultation was also reduced during the year.

HANDICAPPED PUPILS

Category.	Number ascertained during the year 1953	No. on the register of H.Ps. at 31.12.53.
Blind	1	2
Partially sighted	—	3
Deaf	—	3
Partially Deaf	4	9
Delicate	1	7
Educationally sub-normal	53	128
Epileptic	—	—
Maladjusted	—	2
Physically handicapped	4	10
Multiple Defects	—	4
Speech Defects	10	14
	73	182

Number of cases dealt with during the year under the Education Act, 1944 :

Section 57 (3)	4
Section 57 (5)	9

Much work was done during 1953 in the ascertainment of handicapped pupils and at the year's end the number of such pupils on the register had increased by 43 compared with 1952. As will be seen, the difference may again be ascribed largely to an increase in the number of pupils ascertained to be educationally sub-normal.

Six pupils were placed in special schools during the year—the majority of these being educationally sub-normal pupils admitted to Treborth Hall, Bangor.

The following table shows the number of pupils admitted to special schools during the year and the number in attendance at such schools on the 31st December :—

Category	No. admitted 1953	No. in att'ce. at Dec. 31.	No. waiting adm. Dec. 31.
Blind	—	—	2
Partially Sighted	—	1	—
Deaf	—	3	—
Partially Deaf	—	2	1
Delicate	2	2	2
Educationally Sub-normal	4	23	56
Epileptic	—	—	—
Maladjusted	—	2	2
Physically handicapped .	—	1	2
Multiple Defects	—	1	1
Speech	—	—	—
TOTALS	6	35	66

The number of children ascertained as being handicapped by reason of speech defect has increased to 14. No doubt there are several more such children who would be brought to notice were facilities for treatment easily available. The arrangements made for a few selected cases to be seen at Bangor by the therapist employed by the Caernarvonshire Education Authority continued until March, when the speech therapist left. One Anglesey child received treatment during this period.

Reference is made elsewhere to the question of special school provision.

Penhesgyn.

Penhesgyn is a small sanatorium for girls of school age suffering from tuberculosis (normally of the "primary" type of lesion). This institution is managed by the Caernarvonshire and Anglesey Hospital Management Committee, but the Anglesey Education

Authority is responsible for the provision of education facilities. On the 31st December, 1953, there were 11 children in the hospital, 4 being Anglesey cases. One of the school dentists pays periodical visits.

Child Guidance.

Children showing evidence of being emotionally disturbed are referred to the Child Guidance Clinic which is held at Bangor under the direction of a consulting child psychiatrist on the staff of the North Wales Hospital for Nervous and Mental Disorders, Denbigh.

The number of new referrals in 1953 was 18, of which three were referred by general practitioners, two were referred from St. David's Hospital, and the remainder were referred through the school health service.

The number of first attendances during the year was 17 and the number of further attendances was 22. In addition, three visits were paid to schools by the educational psychologist and 14 visits were paid to homes by the social workers.

Discussions continue with the Management Committee of the hospital on the provision of a comprehensive service and in particular on means of improving the social worker side of the service. It has been felt that the fact that psychiatric social workers are centered on the hospital at Denbigh limits the amount of time they are able to devote to field work in this county. The hospital management committee have recognised this to the extent of agreeing to amend their establishment to provide for a social worker to be stationed at Bangor and to serve Anglesey and part of Caernarvonshire. Another difficulty facing the service is lack of adequate accommodation which prevents the provision of treatment facilities for these children. At the present time proper treatment cannot be provided at Bangor for many of these cases.

DENTAL SERVICE

The Authority's dental service was up to establishment throughout 1953.

The statistics relating to dental work will be found in Table IV on pages 28-29 where it will be seen that 74 per cent. of the school population were inspected for dental defects.

As usual, dental defects were found to be very common, 76 per cent. of the children inspected being considered in need of treatment.

The dental anaesthetic apparatus referred to in my last report was delivered during the year, and one anaesthetic session was held in September.

Dr. C. Rolant Thomas reports as follows :—

“ From the routine inspections of school children in this area of Anglesey, during 1953, it is evident that general dental practitioners are showing greater interest in treatment of children, the health service, and the school dental service in this way supplementing one another.

“ The scheme whereby parents of new entrants had the option of giving consent to dental treatment during the child's entire school life, has now been extended to all school children, and is building up a group of children accustomed to regular dental attention. On leaving school, it is hoped that they will voluntarily continue this routine by regular visits to a private dental practitioner for examination and treatment.

“ ‘ Consent Forms ’ are sent to the parents of all children referred for dental treatment, and considerable ingenuity is shown by some in their interpretation of these forms. The advisability of printing all forms in simple Welsh as well as in basic English is worth considering.

“ The mobile clinic has been in constant use since it was installed in 1952, and provides good conditions where there is no permanent clinic. It should, however, be regarded only as an adjunct to a conveniently situated, fully equipped dental treatment centre, for which it cannot in any way act as a substitute. Accommodation in a mobile unit is of necessity very cramped, and, in addition, it may be in use in a far point of the area it serves, and out of reach for emergencies or special cases at a time when it is most urgently needed. It cannot be the complete answer to the school dental service accommodation of an area.

“ The Ministry of Health has accepted the report of the United Kingdom mission which studied the fluoridation of domestic water supplies in North America as a means of controlling dental caries. Similar experiments are to be carried out in selected areas of this country. Since the school dental service is essentially directed towards the control of dental disease, the progress of these experiments will be followed in the service with keen interest and optimism, in the hope that these experiments will lay the foundation of a preventative control over this wide-spread disease.

“ I am much indebted to the teaching staffs for their co-operation and courtesy whenever the clinic visits the schools.”

Mr. Elwyn Jones reports as follows :---

“ Routine inspection and treatment of school children again revealed the poor condition of their teeth.

“ The cause is, as ever, lack of cleaning, and one is inclined to think the bigger supplies of cheap sticky sweets which are now available. These eaten last thing before going to bed could do much damage if the teeth are not cleaned after eating them.

“ I am glad to report that there is a reduction in the number of parents who object to having their children's teeth filled.

“ Provision is now made on the consent forms to provide treatment throughout the child's school life. Much could be done if parents signed to this effect. Spasmodic dental treatment nullifies much of the work which has been done. Parents are well advised to do this, and not, as I have said in previous reports, to consider the work of Dental Officers to be the relief of pain only.

“ The help of the teaching and nursing staffs has again been considerable and is very much appreciated.”

MEDICAL INSPECTION RETURNS

Year ended 31st December, 1953

TABLE I.

Medical Inspection of pupils attending Maintained Primary and Secondary Schools (including Special Schools).

A.—Periodic Medical Inspections.

Number of Inspections in the prescribed groups :

Entrants	1,191
Second Age Group	706
Third Age Group	696
Total	2,593
Number of other periodic inspections	—
Grand Total	2,593

B.—Other Inspections.

Number of special inspections	1,084
Number of re-inspections	1,964
Total	3,048

C.—Pupils Found to Require Treatment.

Number of individual pupils found at Periodic Medical Inspection to require treatment (excluding Dental Diseases and infestation with Vermin) :—

Group	For defective vision (excluding squint)	For any other conditions recorded in Table II.A	Total individual pupils
Entrants	16	184	193
Second Age Group.....	58	63	118
Third Age Group	64	58	117
Total prescribed Groups ..	138	305	428
Other periodic inspections..	—	—	—
Grand Total	138	305	428

TABLE II.

A.—Return of Defects Found by Medical Inspections.

Defect Code No.	Defect or Disease.	Periodic Inspections		Special Inspections	
		<i>No. of Defects.</i>		<i>No. of Defects</i>	
		Requiring treatment	Requiring to be kept under obs. but not re- quiring treatment	Requiring treatment	Requiring to be kept under obs. but not re- quiring treatment
4	Skin.....	12	12	9	7
5	Eyes : a. Vision	138	35	200	59
	b. Squint ..	41	31	48	24
	c. Other	17	3	18	5
6	Ears : a. Hearing ..	3	9	9	8
	b. Otitis.....				
	Media ..	5	8	5	7
	c. Other	4	3	8	2
7	Nose or Throat	78	139	57	58
8	Speech	2	7	7	6
9	Cervical Glands	18	62	11	20
10	Heart & Circulation	8	21	1	7
11	Lungs	22	60	17	28
12	Developmental :				
	a. Hernia....	5	9	—	4
	b. Other	2	14	4	10
13	Orthopaedic :				
	a. Posture	7	20	1	8
	b. Flat Foot...	82	27	40	24
	c. Other	29	18	16	8
14	Nervous System :				
	a. Epilepsy...	—	2	1	4
	b. Other	—	—	1	2
15	Psychological :				
	a. Development	1	10	51	11
	b. Stability ...	2	3	23	1
16	Other.....	14	89	29	31

TABLE II. (Continued).

B.—Classification of the General Condition of Pupils Inspected during the year in Age Groups.

Age Groups	No. of pupils inspect ed	A. (Good)		B. (Fair)		C. (Poor)	
		No.	% of Col. 2	No.	% of Col. 2	No.	% of Col. 2
1	2	3	4	5	6	7	8
Entrants	1,191	306	25.7	854	71.7	31	2.6
2nd Age Group.....	706	139	19.7	559	79.2	8	1.1
3rd Age Group	696	262	37.6	423	61.1	11	1.5
Other periodic Inspections	—	—	—	—	—	—	—
Total	2,593	707	27.3	1,836	70.8	50	1.9

TABLE III.

TREATMENT TABLES

Group I.—Diseases of the skin (excluding uncleanness, for which see Table V).*No. of Defects
dealt with*

Ringworm—Scalp :

i.—X-ray treatment	—
ii.—Other treatment	—
Ringworm—Body.....	—
Scabies	—
Impetigo.....	—
Other Skin diseases.....	13

Group II.—Eye Diseases, Defective Vision and Squint :

External and other, excluding errors of refraction and squint	84
Errors of refraction (including squint)	574
Total	658
No. of pupils for whom spectacles were (a) prescribed	552
(b) obtained.....	477

Group III.—Treatment of Defects of Ear, Nose and Throat :*No. of Defects
dealt with*

Received operative treatment :

(a) for diseases of the ear.....	—
(b) for adenoids and chronic tonsillitis	158
(c) for other nose and throat conditions	5

Received other forms of treatment	178
	<hr/> 341 <hr/>

Group IV.—Orthopaedic and Postural Defects :

(a) No. treated as in-patients in hospitals or hospital schools..	11
(b) No. treated otherwise, e.g., in clinics or out-patient departments.....	679

Group V. & VI.—Child Guidance Treatment and Speech Therapy :

No. treated :

(a) under Child Guidance arrangements	23
(b) under Speech Therapy arrangements.....	1

Group VII.—Other Defects :

(a) Miscellaneous minor ailments.....	637
(b) Diseases of the lungs (excluding T.B.)	186*
(c) Tuberculosis—all forms	44
(d) Heart and circulatory diseases	36
(e) Hernia and other developmental abnormalities.....	30
(f) Other Diseases.....	162

Total.....	<hr/> 1,095 <hr/>
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* Includes 100 children examined as contacts of cases of tuberculosis and found to be normal.

TABLE IV.

Dental Inspection and Treatment.

1. No. of pupils inspected by the Authority's Dental Officers :	
(a) Periodic age groups	5,951
(b) Specials.....	32
(c) Total (periodic and specials)	5,983
2. No. found to require treatment	4,567
3. No. referred for treatment	4,567

4.	Number actually treated	2,801
5.	Attendances made by pupils for treatment	3,918
6.	Half-days devoted to : Inspection.....	101
	Treatment	637
	Total.....	738
7.	<i>Fillings</i> : Permanent Teeth	2,062
	Temporary Teeth	557
	Total.....	2,619
8.	<i>No. of teeth filled</i> : Permanent Teeth	1,959
	Temporary Teeth	553
	Total.....	2,512
9.	<i>Extractions</i> : Permanent Teeth.....	434
	Temporary Teeth	4,311
	Total.....	4,745
10.	Administration of general anaesthetics for extraction.....	6
11.	Other operations : Permanent Teeth	113
	Temporary Teeth	13
	Total.....	126

TABLE V.

Infestation with Vermin.

i.	Total number of examinations in the Schools by School Nurses or other authorised persons.....	42,559
ii.	Total number of individual pupils found to be infested.....	105
iii.	Number of individual pupils in respect of whom cleansing notices were issued (Sect. 54 (2) Education Act, 1944)	105
iv.	Number of individual pupils in respect of whom cleansing orders were issued (Sect. 54 (3) Education Act, 1944)	—

APPENDIX

A TUBERCULIN SURVEY OF SCHOOL ENTRANTS.

Description of Survey.

During October and November, 1953, a tuberculin survey of school entrants was conducted in all primary and infant schools in the county, and using the multiple puncture test as described by Professor Frederick Heaf (1), the results being read after an interval of three days. In addition to affording experience of tuberculin testing on a large scale, the survey was intended to serve two purposes: firstly, to establish the level of tuberculin sensitivity in the age group concerned and, secondly, to use positive reactors as a starting point for epidemiological enquiries. A positive reactor is, in a sense, an "index" pointing to some source of infection. For convenience the positive reactors are referred to below as "index cases." Four doctors shared the work of testing, and two had had previous experience of the technique. The largest school was selected for the first testing and this afforded an opportunity to standardise the methods and the reading of results.

As a preliminary measure, letters were sent to all general practitioners explaining the survey. They were later informed of any positive readings among the children in their practices together with the results of any subsequent X-ray examinations. A letter was also addressed to head teachers explaining the purpose of the survey and asking them to submit a nominal roll, giving identifying details, of all children admitted to school for the first time in 1953. These lists were scrutinised and the name of any child who had had B.C.G. vaccination or concerning whom a recent report on the tuberculin state was available was deleted. The lists were then returned to the schools with a supply of explanatory letters addressed to the parents, and head teachers were asked to distribute these. These letters informed the parents that unless they instructed the head-teacher to the contrary, parental consent to the testing of the child was to be taken as forthcoming. Assumption of consent in this manner led to no difficulties and was the method adopted in at least two other surveys of school children. (2). (3).

The total number of schools involved was 55 and only in 11 of them were there more than twenty children in the age group. Two visits were paid to each school—one for testing and one for reading the results.

Every tuberculin positive child was given an appointment for an X-ray examination at the nearest chest clinic. One of the lessons learnt by the survey was the need to arrange for this examination to be done with a minimum of delay otherwise many parents will worry un-necessarily. No amount of explaining the interpretation to be placed on a positive tuberculin reaction was as effective as a "clear" X-ray report in reassuring many of the parents.

Special visits were paid to the homes of positive reactors in an attempt to discover the source of infection. All adult members of the household were asked to attend the nearest chest clinic for X-ray examination and all siblings under school-leaving age were, with the parents' consent, given a multiple puncture tuberculin test. Positive reactors among these siblings were given appointments for X-ray examination. Enquiries were made about any contact with known cases of tuberculosis and a note was made of the milk supplier.

Results.

In Table I the results of the survey are set out. It was found that a number of children were presented for testing outside the main age group. These included children who were either unusually young or unusually old on entering school, and a number who were tested at the special request of the parent. The 68 children are not in any sense a representative sample. These cases are not considered further in assessing the level of tuberculin sensitivity.

TABLE I.

Age Group	On School Rolls	Not Tested	Tested	Result not available	Positive Reactors
4 and 5 years.....	811	153	658	14	30
Others	—	—	68	5	7

The 153 cases in the age group who were not tested can be classified as follows :—

Refused Tests.....	16
Absent on day of Test	90
Known to have been vaccinated with B.C.G.....	33
Known to be tuberculin positive	12
Known to be tuberculin negative.....	2

In estimating the level of tuberculin sensitivity in the age group account must be taken not only of those tested during the survey but also of those whose reaction was already known, and this latter group must be related to the total number in the age group. Excluding those children who had been vaccinated there were 778 children in the age group, of whom 14 had recently been tested independently of the survey. The remaining 764 consist of 644 who were tested and the result was recorded, and 120 in whose case the reaction is not known either on account of refusal or absence at the testing or the reading sessions. The only estimate that can be made with respect to this group of 120 is that the percentage of reactors in their case would have been the same as for the 644 whose result is known. Making this allowance and adding the 14 children who were tested prior to the survey, it is estimated that 6.1 per cent. of the 778 children aged four and five years who had not received B.C.G. vaccination were tuberculin positive. In addition, another 4.1 per cent. (33 out of 811 children) were positive reactors as the result of vaccination.

In Table II the results of similar surveys of school children in comparable age groups is set out :—

TABLE II.

Place	Test	% + ve.	Reference
Radnor	Jelly	3.5	(2)
Bournemouth	Jelly	5.0	(3)
Wolverhampton	Jelly	6.3	(4)
Rhondda Fach.....	Mantoux/M.P.	7.7	(5)
<i>M.R.C. Survey :</i>			
Portsmouth	Mantoux	5.1	} (6)
Montgomery.....	Mantoux	8.4	
Maesteg.....	Mantoux	14.2	
All Areas	Mantoux	14.5	

Portsmouth, Bournemouth, Rhondda Fach, Wolverhampton, and perhaps Radnor, all represent a level of tuberculin sensitivity in the production of which bovine infection probably plays a negligible part.

In the present survey the number of *refusals* was small—16 (2 per cent.) out of 764 children who were offered the test. On the other hand, the number of *absentees* was considerable—90 (12 per cent.) out of 748 children for whom consent was assumed to be forthcoming. By comparison, only 14 (2 per cent.) out of the 658 children who were tested were absent when the school was visited for reading the tests. The difference is significant and the question

arises whether absence on the day of testing is a concealed form of refusal. To test this hypothesis the registers of ten schools selected at random were examined for the three weeks prior to the survey visit. The average percentage of children in the age group absent on the corresponding day of the week over this period was 16 per cent. This evidence does not therefore support the suggestion that absence is a concealed form of refusal to test. The difference between the numbers absent for testing (12 per cent.) and absent for reading of test (2 per cent.) may be due to parental anxiety to know the result once the test had been done prevailing over the many minor reasons for keeping a child home that probably operate in this age group.

The total loss (14 per cent.) from refusal and absence compares with approximately 20 per cent. lost to the first test and a further 10 per cent. to the second test in the Rhondda Fach survey ⁽⁵⁾, where the Mantoux test was used. The number of refusals and absences in the present survey are very similar to those reported by Jones Davies ⁽²⁾ from Radnor.

Clinical Observations.

There were in all 37 positive reactors and the *numerical grading of the response* observed, following Heaf's classification, was as follows :—

	<i>Number</i>	<i>Per Cent.</i>
Positive 1.....	14	38
Positive 2.....	16	43
Positive 3.....	7	19
Positive 4.....	—	—

The reaction designated by Heaf as Positive 1 (*i.e.*, multiple puncture scars with definite induration) has been counted as positive. Jarman regards this reaction as negative ⁽⁵⁾. From the data he gives of comparative tests it would appear that to regard the Heaf 1 reaction as negative would result in under-estimating the positives (as established by serial Mantoux tests) by about 16 per cent., while to regard the Heaf 1 reaction as positive would be to over-estimate the positives by about 7 per cent. The error in either direction is large if scientific precision is the aim, but for the purposes of an epidemiological procedure an over-estimate of 7 per cent. is perhaps acceptable bearing in mind the great advantages of an administrative nature the multiple puncture test possesses over any intradermal test, especially one involving serial injections.

All 37 positive reactors were given appointments for an *X-ray examination of the chest*. Consent was refused in one case, and three failed to attend. In 28 cases no abnormality was detected ; three had evidence of a healed primary focus and in two cases there was evidence of a recent primary focus necessitating a period of further observation.

Households of Index Cases.

The 37 positive reactors represented 36 households containing in addition to the index cases, 54 children under school-leaving age and 88 adults. Consent to testing was withheld in 12 instances, but of the remaining 42 children, 16 or 38 per cent. were found to be positive. Reports on a chest X-ray are available for 12 of these (two did not attend and two were small infants who proved technically impossible to examine). In ten of the twelve children no abnormality was detected ; one had a healed primary focus and the other, a girl of twelve, was subsequently notified as a case of primary tuberculosis severe enough to warrant admission to hospital.

The adult members of the households concerned were also given appointments for an X-ray examination of the chest but only 30 (34 per cent.) of the 88 adults were, in fact, examined. All the adult members were examined in 17 of the 36 households and only in five households were no adults examined. No cases of tuberculosis were found among these 30 adults.

Bovine Infection.

The milk supply under the milk in schools scheme has all been pasteurised for the last ten years at least. The milk supply in the home was, and always had been, pasteurised milk in 14 of the index cases and tuberculin-tested milk in a further 13 cases. In two only of the remaining ten cases could the milk supply be incriminated with some degree of certainty. The farm supplying these households was known to have produced tuberculous milk during the previous twelve months. In a further two cases the milk supply had been suspect, although not proved to be infected, at some time in the past. In the remainder such evidence as was available did not suggest a bovine source, although the possibility of acquiring a casual infection from milk, for example, when away from home, could not, of course, be ruled out.

Milk as a source of tuberculous infection, even in a predominantly rural area such as Anglesey, is becoming increasingly less important. Only four children (0.6 per cent.) in the age group were

definitely suspected to have been infected by milk. For comparison the results are shown in Table III of some recently reported surveys of children of this age group in areas where bovine infection was considered to be prevalent :—

TABLE III.

Place	Test	% + ve.	Reference
Leicestershire.....	Jelly	45.8	(7)
Rural Areas, Eng. & Wales	Mantoux.....	20.3	(6)
Calder Valley	Mantoux	19.8	(8)

The low level of bovine infection in Anglesey is to be ascribed to the increasing consumption of pasteurised milk and to the increasing number of cattle that are free from tuberculosis. It is estimated that the amount of pasteurised milk sold in the county has increased by 27 per cent. between 1950 and 1953, and now represents 0.3 pints per day per head of the resident population. During the same period the number of tubercle-free herds has increased by 70 per cent. At the present time 72 per cent. of all milk sold off farms in the county comes from tuberculin-tested or attested herds.

Human Sources of Infection.

The 33 index cases in which there was no particular reason to suspect a bovine source, fell into three groups :—

- (a) In 16 cases, enquiry revealed a history of contact with a human source of infection.
- (b) In seven instances all adults in the household were radiologically negative and no history could be elicited of contact with a human source outside the home.
- (c) In the remaining 10 cases there was also no history of contact, but as only nine adult members of the households concerned, out of a total of 26, attended for X-ray examination the possibility of a human source in the home could not be excluded.

In the first group of 16 index cases, there was in each instance history of contact with a known case of adult disease. In addition, all the adults in the household were shown to be radiologically negative in eight instances. The possibility of infection being derived from an adult within the home could not be excluded in

the remaining eight instances as only 10 out of the 24 adults concerned attended for examination, all, however, with negative results.

The positive reactors in the age group total 82 children, comprising :—

37 found by the survey.

45 found in routine contact tracing (Thirty-three vaccinated with B.C.G., nine contacts known to be positive reactors and three previously notified cases).

With the exception of the four children already referred to it is assumed, for lack of evidence to incriminate the milk supply, that these are all instances of exposure to human sources of infection.

These human sources of infection may be grouped into "intra-domiciliary," "extra-domiciliary," and "not known" sources. For the 78 children concerned the grouping is shown in Table IV.

TABLE IV.

Source of Infection	Index Case found by :		Total	%
	Routine Contact Tracing	Special Survey of age Group		
Intra-domiciliary..	21	—	21	27
Extra-domiciliary	23	23	46	59
Not known	1	10	11	14
	45	33	78	100

In his investigations over a period of years in the Kinn district of Norway, Gedde-Dahl ⁽⁹⁾ found the source of infection in converters aged 0—14 years in the home in 49 per cent. and outside the home in 37 per cent. of instances. Even in this painstaking and comprehensive enquiry which included the adult population as well as children, 14 per cent. of childhood infections were ascribed to unknown sources. The district in which Gedde-Dahl worked was sparsely populated, with probably fewer opportunities for extra-domiciliary infection than would be the case in Anglesey. This fact presumably accounts for the larger proportion of extra-domiciliary infections found in this county.

In 60 cases the relationship to the child reactor of the presumed source of infection was known. (In seven instances, as has been

stated, all that could be said with certainty was that there were no sources of infection in the household.)

These relationships are set out in Table V :—

TABLE V.

Relationship of Source of Infection.	Index Case found by :		
	Routine Contact Tracing	Special Survey of Age Group	Total
Parent.....	14	—	14
Grandparent.....	3	2	5
Sibling	9	—	9
Uncle, Aunt, Cousin	15	6	21
Others	3	8	11
Total	44	16	60

Where the source can be traced with some degree of certainty it was found to be among the immediate family in approximately half the cases (47 per cent.), among the more remote family in approximately one-third (35 per cent.), and among friends, neighbours, lodgers, etc., in the remainder (18 per cent.) of the cases.

Contact Tracing.

The tracing of the contacts of all new cases of tuberculosis coming to notice, whether by formal notification or otherwise, has been practised in this area for some years but hitherto has been confined to the immediate household of the patient. The amount of work done as routine contact tracing may be indicated by the following figures relating to the period 1950 to 1953 inclusive :—

Number of new cases of tuberculosis coming to notice.....	316
Number of child contacts tested with a view to vaccination.....	802
Number of children vaccinated with B.C.G. vaccine	444

It is clear that the existing methods of contact tracing are not completely effective in bringing vaccination within the reach of all those exposed to risk. Enquiry revealed that 16 index cases had probably been infected by known cases of tuberculosis.

From the attendant circumstances of these 16 cases "missed" by the contact tracing procedure as currently practised, it would appear that this procedure would have to be amended in two ways in order to ensure that vaccination is offered to all children at risk before they convert naturally. In the first place, the net must be more widely cast to include cousins, nephews, nieces, grand-children, and near neighbours of the notified case as well as any children in homes visited regularly by the patient. Secondly, the children at risk are not a static element to be ascertained once and for all soon after the case is notified. Fresh susceptibles are always entering the circle of potential infection which centres around the notified case. Not only, therefore, must the net be cast more widely, but it must also be cast more often.

The cost of such an "ideal" contact tracing procedure will, of course, be directly related to the prevalence of tuberculosis in the community. Even so, there will be between 2 per cent. and 3 per cent. of children in this age group who react to tuberculin having been infected from an unknown source. A tuberculin survey of an age group can serve as a check on the efficacy of routine contact tracing.

As a means of bringing to notice unsuspected sources of infection the present survey proved disappointing. The scope in this direction was, of course, limited to the 10 instances where no contact with a known case could be demonstrated, and where all adults in the household were not examined. In the Bournemouth Michaelmas survey ⁽³⁾ the number of contacts examined per positive index case is 3.4, while in Anglesey, it is only 2.0. Whereas in Anglesey the number of adult defaulters was as high as 66 per cent., in the Michaelmas survey in Bournemouth there do not appear to have been any. This large difference is to be ascribed to the use in Bournemouth of mass radiography facilities. We were only able to offer appointments at a chest clinic, and attendance by the male adults would often have meant losing a half-day's work. To be successful as a means of detecting undiscovered adult sources of infection a survey of school entrants must be linked to convenient and accessible X-ray facilities such as are provided by a mass radiography unit.

Summary.

- (1) A tuberculin survey of school entrants in Anglesey was conducted in 1953, using the multiple puncture test; 86 per cent. of those eligible in the age group 4 and 5 years were tested.

- (2) It is estimated that 6.1 per cent. of children in this age group are tuberculin positive as the result of infection acquired naturally. Another 4.1 per cent. were positive reactors as the result of B.C.G. vaccination.
- (3) In all, 45 children were X-rayed (33 index cases and 12 tuberculin positive child contacts), and of these four had healed chest lesions and three had active or query active lesions.
- (4) Only 30 (34 per cent.) of the adult members of the households of index cases attended for X-ray. All were negative.
- (5) Out of a total of 37 index cases the evidence suggested that the source of infection was milk in four instances only. Of the remaining 33 cases, contact with a known human source could be traced in 16, no such contact could be found in 17, and in seven of these the possibility of a human source in the home could be excluded.
- (6) Human sources of infection were intra-domiciliary in 47 per cent., extra-domiciliary in 35 per cent., and not known in 18 per cent. of instances. The source was in the immediate family in 47 per cent. of cases, and in the more remote family in 35 per cent. of cases.
- (7) Improvements in contact tracing would have reduced the number of "unexplained" conversions to between 2 and 3 per cent. of the children examined.
- (8) No new adult cases were brought to light as the result of the survey. This was thought to be due to the failure of many adults to attend for examination. Convenient X-ray facilities must be provided if a tuberculin survey is to succeed as a means of discovering hitherto unsuspected sources of infection in the community.

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REFERENCES.

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|----|--|------|------------------|-----------|-------|
| 1. | Heaf, F. | 1951 | Lancet | 2 | 151. |
| 2. | Jones Davies, T. E. | 1950 | Brit. J. Tuberc. | 1 | 44. |
| 3. | MacDougall, I.A., Michail, J.R., and
Tattersall, W. H. | 1953 | Brit. Med. J. | 1 | 64. |
| 4. | Parkes, W. E. | 1952 | Lancet | 1 | 361. |
| 5. | Jarman, T. F. | 1953 | Brit. Med. J. | 1 | 754. |
| 6. | Medical Research Council National
Tuberculin Survey | 1952 | Lancet | 1 | 775. |
| 7. | Kind, R. W., and Brough, M. C. | 1954 | Brit. Med. J. | 1 | 372. |
| 8. | Keidan, S., Lyons, J., Mann, B., and
Wilthew, G. A. | 1952 | Brit. Med. J. | 1 | 1390. |
| 9. | Gedde-Dahl, T. | 1952 | Amer. J. Hyg. | 56 | 139. |